

ENGINEERING
TOMORROW

Danfoss

Sustainable Cooling

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ATMO
sphere
CHINA

INTRODUCTION - Our business

11 

FACTORIES IN 8 COUNTRIES

6,025

EMPLOYEES WORLDWIDE 

NUMBER OF COUNTRIES IN WHICH OUR PRODUCTS ARE SOLD

100 

TOTAL NET SALES / bn DKK

11.2 

Refrigeration & Air Conditioning Controls

Automatic Controls
Industrial Refrigeration
Food Retail



Heat Exchangers

Heat Exchangers



Industry Business

Appliance Controls
High Pressure Pumps
Industrial Automation



Commercial Compressors

Scroll and Reciprocating
Oil-free centrifugal



System Solutions & New Business

Condensing Units



NATURAL REFRIGERANT-BASED SOLUTIONS



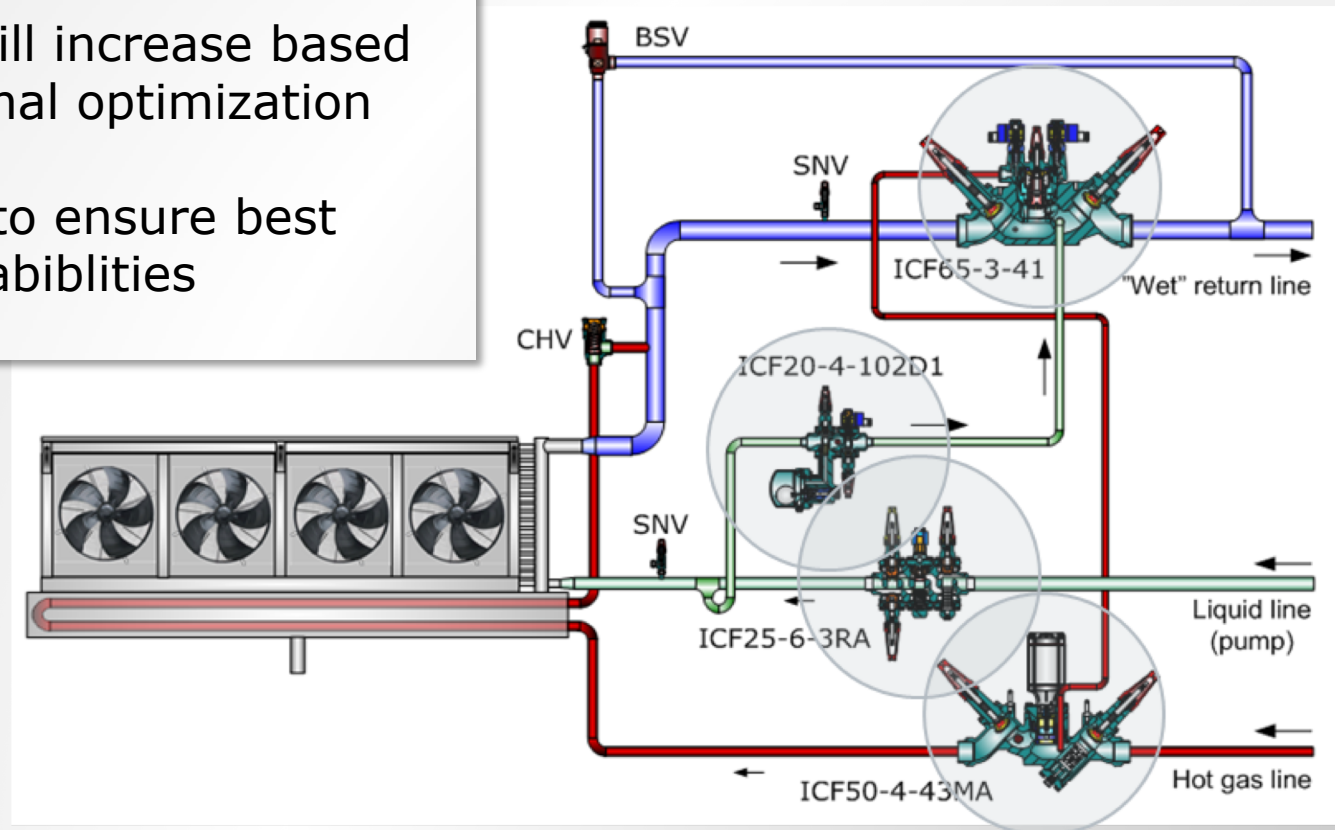
- Components and controllers
 - CO₂
 - Ammonia
 - Ammonia/CO₂
 - Hydrocarbons
- Applications
 - Industrial Refrigeration
 - Transport Refrigeration
 - Food Retail
 - Chillers



Safety and efficiency improvements

Hot gas defrost by liquid drain in Ammonia based plants

- Safety can be ensured using electronic valves and controls
- Efficiency will increase based on operational optimization
- Innovation to ensure best defrost capabilities



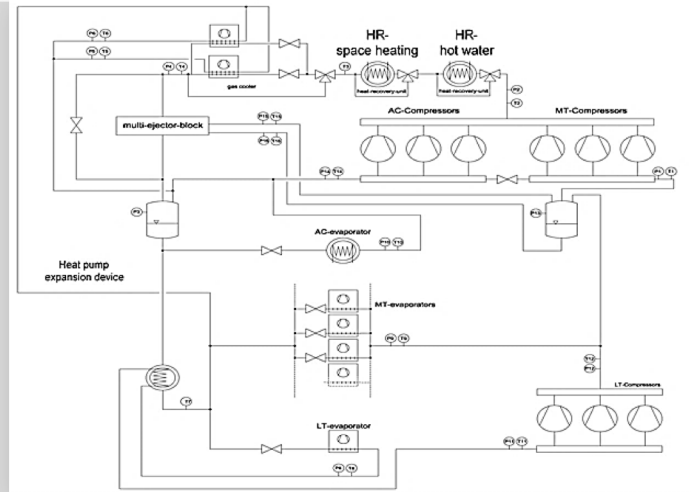
Integrated HVAC/R – all natural

Case Study Italy; R744 Ejector Plant for Refrigeration and Air Conditioning

Summary:

"... For every investigated operation conditions, the refrigeration system with the running vapour ejectors reduced the total energy power consumption mainly between 15 and 30% depending on the ambient temperatures and corresponding AC requirements. ..."

Simplified system layout of the R744 refrigeration and AC plant



Danfoss Multi-Ejector and Pack Controller



Sum up



Key messages

Natural refrigerants will play an even more central role in the future

Technology development of applications using natural refrigerants gains momentum and addresses safety and energy efficiency

- Defrost modules for Ammonia systems
 - Heat recovery for CO2 systems
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Challenges are

- Timely alignment between phase downs and standard measures
 - Demands for operational competences and related educational institutions
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Many thanks for your attention



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